

ABSTRACT OF THE DISCLOSURE

METHOD OF MANUFACTURING GROUP III NITRIDE SUBSTRATE AND SEMICONDUCTOR DEVICE

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The present invention provides a method of manufacturing a Group III nitride substrate that has less variations in in-plane carrier concentration and includes crystals grown at a high growth rate. The manufacturing method of the present invention includes: (i) forming a semiconductor layer (a seed layer 12) on a substrate, with the semiconductor layer being formed of a semiconductor expressed by a composition formula of $\text{Al}_u\text{Ga}_v\text{In}_{1-u-v}\text{N}$ (wherein $0 \leq u \leq 1$ and $0 \leq v \leq 1$) and having a (0001) plane present at its surface; (ii) processing the surface of the semiconductor layer so that the surface becomes a plane sloped with respect to the (0001) plane of the semiconductor layer; and (iii) bringing the surface of the semiconductor layer into contact with a melt containing a solvent and at least one Group III element selected from gallium, aluminum, and indium, in an atmosphere containing nitrogen, to make the at least one Group III element and the nitrogen react with each other to grow Group III nitride crystals (GaN single crystals 13) on the semiconductor layer.

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